SAMSUNG

DISHWASHER

Basic model : DW80M2020US

Model Name : DW80M2020US

Model Code : DW80M2020US/AA
DW80M2020US/AC

SERVICE *Manual*

DISHWASHER

DW80M2020US

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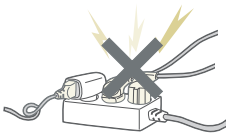
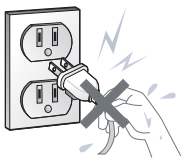
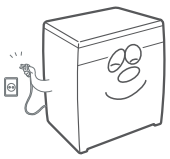
1. SAFETY INSTRUCTIONS

1-1. SAFETY INSTRUCTIOINS FOR SERVICE ENGINEERS

- Make sure to observe the following instructions to operate the product correctly and safely and prevent possible accidents and hazards while servicing.
- Two types of safety symbols, Warning and Caution, are used in the safety instructions.

Warning	Hazards or unsafe practices that may result in severe personal injury or death.
Caution	Hazards or unsafe practices that may result in minor personal injury or property damage.

⚠ Warning

Before Servicing	
• (When servicing electrical parts or harnesses) Make sure to disconnect the circuit breaker or power cable before servicing. ➢ Failure to do so may result in a risk of electric shock.	
• Do not allow consumers to connect several appliances to a single power outlet at the same time. ➢ There is a risk of fire due to overheating.	
• When removing the power cord, make sure to hold the power plug when pulling the plug from the outlet. ➢ Failure to do so may damage the plug and result in fire or electric shock.	
• When the dishwasher is not being used, make sure to disconnect the circuit breaker or power cable from the power outlet. ➢ Failure to do so may result in electric shock or fire due to lightning.	
• Do not place or use gasoline, thinners, alcohol, or other flammable or explosive substances near the dishwasher. ➢ There is a risk of explosion and fire caused from electric sparks.	

While Servicing

- Check if the power cable is damaged, flattened, cut or otherwise degraded.
  - ➢ If faulty, replace it immediately.
    Failure to do so may result in electric shock or fire.

- Completely remove any dust or foreign material from the housing, wiring and connection parts.
  - ➢ This will prevent a risk of fire due to arcing and short circuits in advance.

- When connecting wires, make sure to connect them using the correct connectors and check that they are completely connected.
  - ➢ If tape is used instead of the connectors, it may cause fire due to arcing.

- Make sure to disconnect the PBA power terminals before starting the service.
  - ➢ Failing to do so may result in a high voltage electric shock.

- When replacing the heater, make sure to fasten the nut after ensuring that it is inserted into the bracket-heater.
  - ➢ If the nut is not fastened correctly, it can cause a water leak.

After Servicing

- Check for any water leakage.
  - ➢ Perform a test using the standard(normal) cycle and check whether there is any water leakage through the floor section or the pipes.

- Do not allow consumers to repair or service any part of the dishwasher themselves.
  - ➢ This may result in personal injury and shorten the product life.

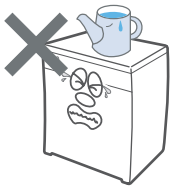
- If it seems that grounding is needed due to water or moisture, make sure to run grounding wires.
  - ➢ Failure to do so may result in electric shock due to electric leakage.

⚠ Caution

Before Servicing

- Do not sprinkle water onto the dishwasher directly when cleaning it.
  - ➢ This may result in electric shock or fire, and may shorten the product life.

- Do not place any containers with water on the dishwasher.
  - ➢ If the water is spilled, it may result in electric shock or fire. This will also shorten the product life.



- Do not install the dishwasher in a location exposed to snow or rain.
  - ➢ This may result in electric shock or fire, and shorten the product life.

- Do not press a control button using a sharp tool or object.
  - ➢ This may result in electric shock or damage to the product.

During Servicing

- When connecting a wiring harness, make sure to seal it completely so no liquid can enter.
  - ➢ Make sure that the connections are securing by slightly pulling on them.

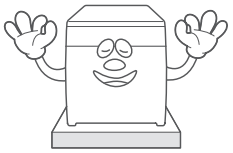
- Check if there is any evidence that liquid has entered electric components or connections.
  - ➢ If any liquid has entered into a part, replace it or completely remove any remaining moisture from it.

- If you need to place the dishwasher on its back for servicing purposes, place a support(s) on the floor and lay it down carefully so the back is on the floor.
  - ➢ Do not lay it down on its front or side. This may result in scratches to the surface or damage to the parts.

After Servicing

- Check the assembled status of the parts.
  - ➢ They must be the same as before servicing.

- Check whether the product is level with the floor and secured to the cabinet and under the counter.
  - ➢ Vibrations can shorten the life of the product.



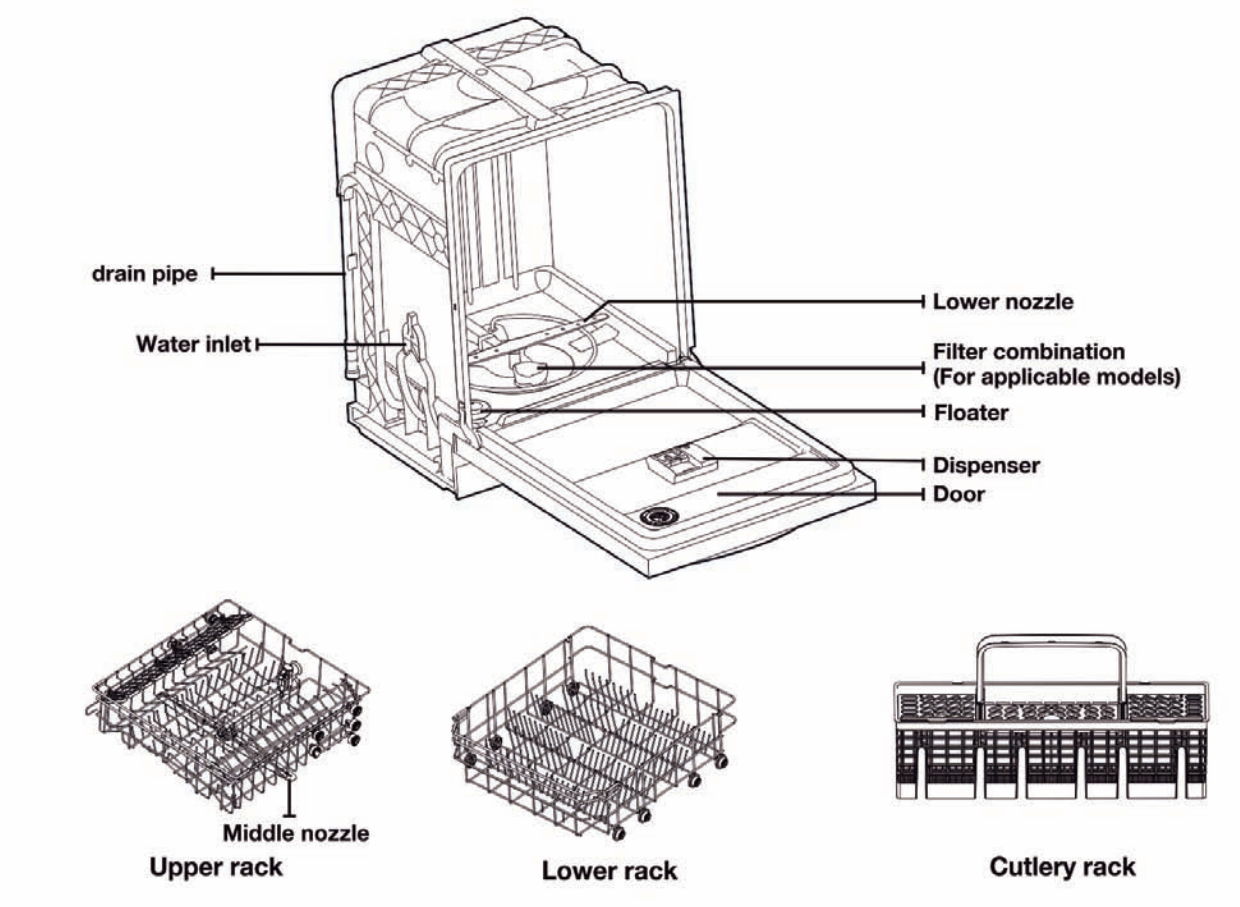
2. FEATURES AND SPECIFICATIONS

2-1. FEATURES

Features	Description	Remarks
Extra large capacity	The space has been maximized to accommodate 14 place-setting dish.	
Increased convenience	The smart auto cycle determines the level of soil on the dishes and initiates the optimal cycle for cleaning. Use this feature to save water, energy, and time.	
Elegant design with digital touch sensors	Digital touch sensors are used in the control panel for more simple operation, with a touch of elegance.	

2-2. SPECIFICATIONS

MODEL name	DW80M2020US
Power supply	120 V, 60 Hz AC only
Water pressure	20 ~ 120 psi (140 ~ 830 kPa)
Wash method	Rotating nozzle spray type
Dry method	Open heated dry
Power	Heater : 840 W Wash Motor : 50 W
Water consumption	2.8-6gal(10.8-22.5ℓ),Normal Cycle



Accessory parts -User/Installation manual,Installation Kit.

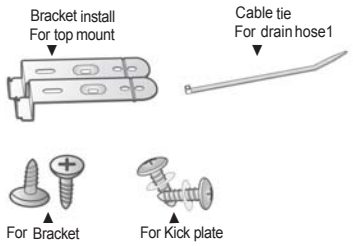
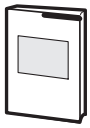
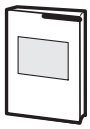
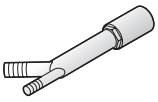
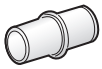
Warning The floater is an important component for dishwasher operation.
Please do not tamper with floater.

Main Features	· Capacity: 14 place settings. · Control panel design. - Top control type + Touch operation. · Dimension (W x D x H) : 23 3/4 x 24 5/8 x 33 3/4 in (604 x 625 x 858 mm) (Excluding Handle)
Sales Point	· Flexible Style : Inclined Rack System, Height adjustable Upper Basket(manual). · Upgraded Kitchen : Pleasant kitchen environment, Simple & Modern design. · Smart Control : Soil sensing Programming

2-3. COMPARING SPECIFICATIONS WITH EXISTING MODELS

Brand		Samsung	Whirlpool	Frigidaire	GE
Model No.		DW3000MM (DW80M2020US)	WDF520PADM	FFID2423RS	GDF520PSJSS
Image					
Design	CMF / Material	STS	STS	STS	STS
	Control	Fully Integrated, Top control, Touch control	Front Control	Fully Integrated, Top control	Front Control
	Handle Design	Bar	Pocket	Bar	Pocket
Feature	P/S	14	14	12	15
	Cleaning	Rotary	Rotary	Rotary	Rotary
	Drying	Vent, Open Heated dry	Vent, Open Heated dry	Open Heated dry	Vent, Open Heated dry
	Cycles	4	4	4	4
	Options	3 (Delay start, Sanitize, Hi-Temp Wash)	3 (Delay start, Heated dry, Hi-Temp Wash)	3 (Delay start, Heated dry, Hi-Temp Wash)	3 (Delay start, Heated dry, Steam cleaning)
	Racking system	2 PP Rack	2 Vinyl Rack	2 Nylon Rack	2 Rack
	Filter/Disposer	Filter	Filter	Filter	Filter
	Noise Level	55dB	55dB	55dB	54dB
	Leak Protection	Available	Not Available	Not Available	Not Available
	Energy	Energy Star (249KWh)	Energy Star (260KWh)	286kWh	Energy Star (270KWh)

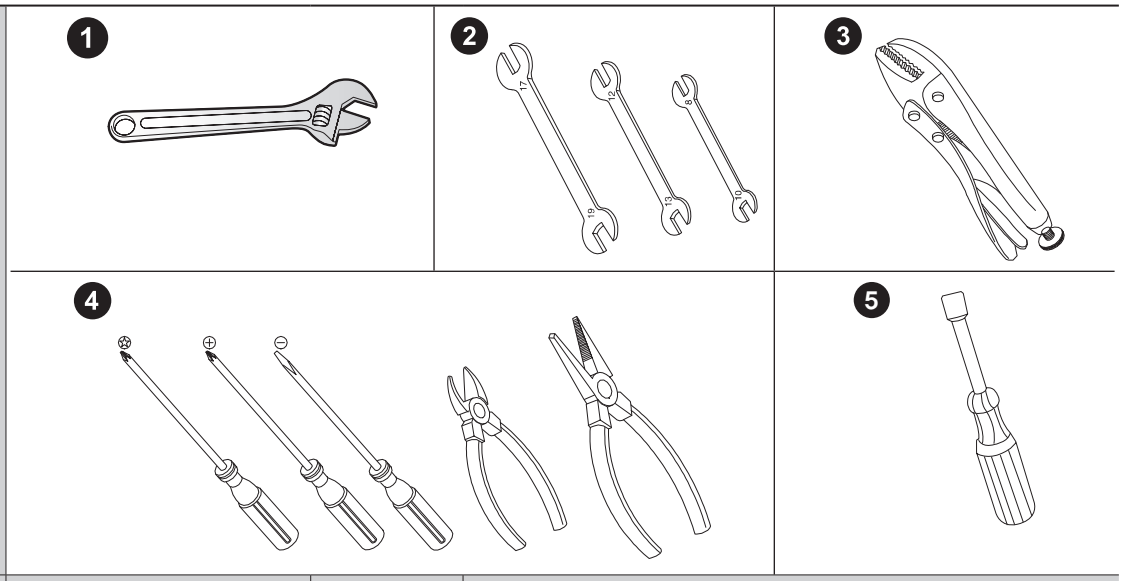
2-4. OPTIONS SPECIFICATIONS

Photo	Item	Code	QTY	Remarks
	Assy-Install Kit: 2 Bracket-install 2 screws for top mounting 2 screws for kick plate 1 clamp for drain hose1&2 1 cable tie drain hose1		1	Provided With the Dishwasher
	User Manual		1	
	Install Guide		1	
	90° Elbow(3/8”)	-	1	Sold separately
	Water Supply Line (Flexible STS supply line is recommend)	-	1	
	Air Gap	-	1	
	Rubber Connector	-	1	
	Strain Relief	-	1	

3. DISASSEMBLY AND REASSEMBLY

3-1. TOOLS FOR REMOVAL AND REASSEMBLY

Tool image



No.	Tool	Type	Remarks
❶	Adjustable Wrench		
❷	Open-end Wrench	1-7/16”	Leg
❸	Vice pliers		
❹	Others (screwdriver, nipper, long nose pliers)		Common tools for servicing Screwdriver - Philips, flat, Torx T15
❺	Nut Driver	10mm	Heater bracket Nut

*** Preparation for parts replacement**

1. Take out the residual water inside the product.
   (Drain the water by operating the drain pump)
2. Close the water supply valve.
3. Turn off the power & disconnect power cable.
   You must turn off the circuit breaker connected to the product.
4. Pull out the unit from the sink and lay it on the floor.
   Be careful of the drain hose when pulling out the unit.

⚠ Caution

When pulling out or laying the dishwasher down for service, it may be necessary to lower the height of the adjustable legs to provide the clearance for the removal of the unit, prevent breaking the legs, or damaging the base of the unit.

3-2. STANDARD DISASSEMBLY DRAWINGS

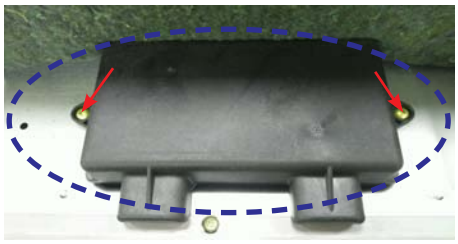
Throughout this manual, features and appearance may vary from your model.

⚠ **Warning**
Always disconnect the electric power supply & water supply before servicing any electrical component, making ohmmeter checks, or replacing any parts.

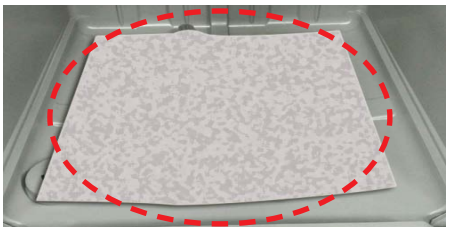
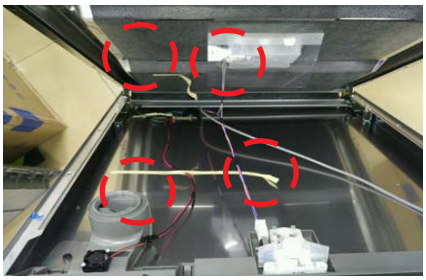
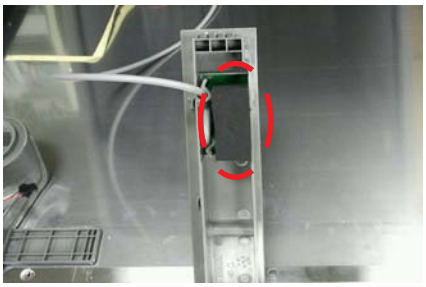
⚠ **Caution**
Before moving the unit, laying it down for service, or removing any parts for service be sure to drain as much of the water from the unit as possible. Use a protective mat or towel to prevent damage to the floor or having any of the remaining water spill on the floor.

All voltage checks should be made with a voltmeter having a full scale range of 250 volts or higher. After service is completed, be sure all safety grounding circuits are complete, all electrical connections are secure, and all access panels are in place.

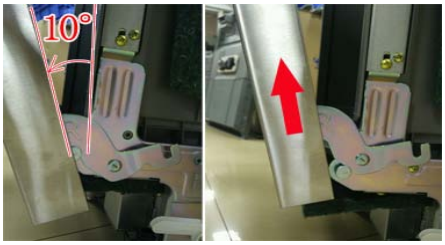
Before servicing, make sure to remove all items from inside of the dishwasher, including the wash racks.

Part	Figure	Description
Main PBA		**Preparation:** • Make sure to disconnect the power. 1. The Main-PBA is located under the door. 2. Remove the two (2) screws of PBA case and pull out the PBA cover carefully.
	 	3. Remove all connectors on the PBA.
	 	4. Remove the two (2) screws on the PBA board . 5. Pull out the PBA board carefully. When removing the Main PBA, lift the PBA board up carefully because it is hanging on the PBA case by two (2) hooks.

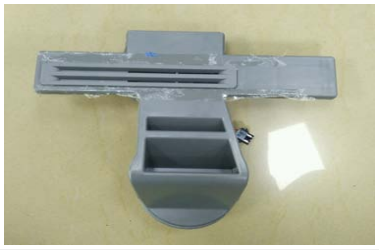
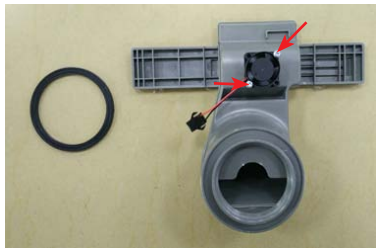
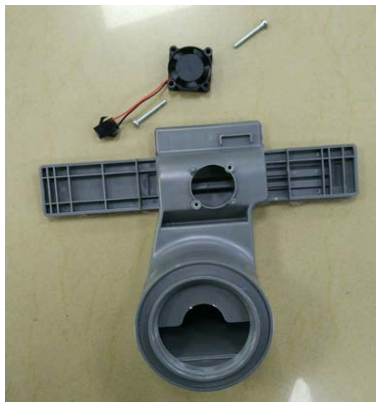
※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Door inner		**Preparation:** • Make sure to disconnect the power. • Remove the lower basket in the dishwasher. • Cover the Assy sump with a towel to prevent losing screws.
		1. Open the door completely. Remove the 14 screws holding the tub front, frame front, and control panel in place. 2. Remove the cover fan by rotating it counterclockwise. Before removing the parts, place a cushioned mat on the floor to prevent the parts from being scratched. After removing screws, make sure to hold the tub front using your hand. It can prevent closing door suddenly and harming you. ⚠ **Caution** Do not place the removed screws on the tub front. They may fall into the sump assy. 3. Remove the four wire connectors. 4. Remove the door inner.
		
Control Panel		1. Remove the Assy control panel from Door outer. (Pull out just a little.)
		2. Remove the black foam block.

※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Control Panel		2. Remove the wire connector from the control panel.
Door outer	  	1. Remove the rope connector from the hinges. 2. Open the door about 10 degrees, and pull up the outer door from the pin.

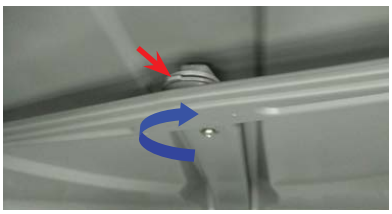
※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
DUCT-CONDENSER		1. Remove the duct-condenser from the door outer.
	 	2. Remove the two(2) screws holding the duct-condenser in place.

※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Dispenser		1.The dispenser is fixed to the tub front with eight(8) hooks. Use a flat tip screwdriver to remove it . 2. Push it to the inside carefully. ⚠ **Caution** Be careful as the tub front is sharp.

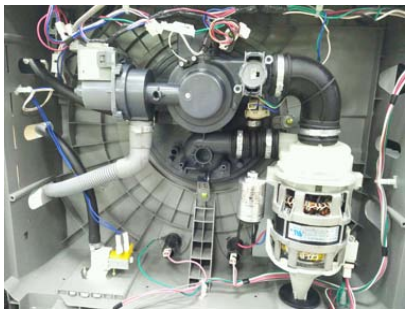
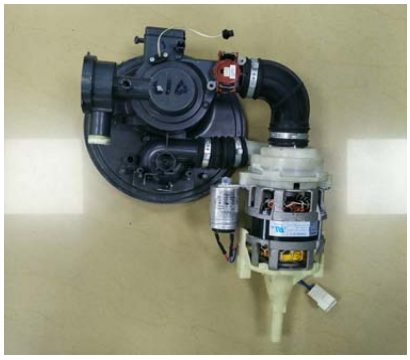
※ *Reassembly is in the reverse order of the removal.*

Part	Figure	Description
Assy Rotor		**Preparation:** • Remove the assy basket-lower in the dishwasher. • Make sure to remove the water in each rotor to prevent water from spilling out. 1. Assy Rotor-Upper : Remove it by rotating the Holder-Rotor. (counterclockwise)
		2. Assy Rotor-Middle : Remove it by rotating the holder-rotor middle from Assy basket-Middle.
		3. Assy Rotor-Lower : Pull out.
Assy Sump - Upper parts Filter-Insert Filter-Fine Filter-Micro		1. Rotate the filter insert counterclockwise to unfasten and then detach the filter insert.
		2. Remove the filter fine.
		3. Remove the filter micro.

※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Lower spray Base		1.Remove two (2) screws from the lower spray base.
		2. Remove the lower spray base.
Cover		1.Remove four (4) screws from the cover.
		2. Remove the cover.

※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Assy Sump - Lower part 		**Preparation:** • Disassemble the Assy-baskets, Case-gear, Assy-duct, Assy rotor-power duct and holder-fine filter. • Disassemble the Cover base, Case-gear and Shaft-rod adjuster foot. - Refer the each disassembly section. 1. Remove the parts which are connected with Assy sump. - connectors, drain pump, screws.
		2. Remove the four (4) screws.
		3. Pull out the Assy sump using your hands toward the outside carefully. ⚠ **Caution** Make sure to remove remaining water in the dishwasher. If not, water will spill on to the floor.
		4. Remove the wash pump.

※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Inlet 		
	 	Preparation: • Make sure to disconnect the power, water supply, and drain hose connections. • Remove the upper & lower baskets in the dishwasher. • Pull out the dishwasher carefully. 1. Remove the two clamps. (Be careful when removing the clamps cause the connecting hose is easily damaged.) 2. Remove connecting hose. ⚠ **Caution** Water remaining in the Water Inlet and connecting hose will come out. Lay a towel on the floor to absorb any water that may come out.
		3.Remove the Water Inlet by rotating (counterclockwise).

※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Base Cover		**Preparation:** • Make sure to disconnect the power, water supply, and drain hose connections. • Remove the upper & lower baskets in the dishwasher. • Pull out the dishwasher carefully. • Remove the water supply line(& elbow). 1. Lay the dishwasher down on its back. Remove the one screw.
		2. Press on and pull out the four fixture hooks.
		3.Hold up the Base Cover and pull out.
		4.Remove the Leakage Sensor.
		5.Press on the two fixture blocks of the Leakage Sensor Cover.

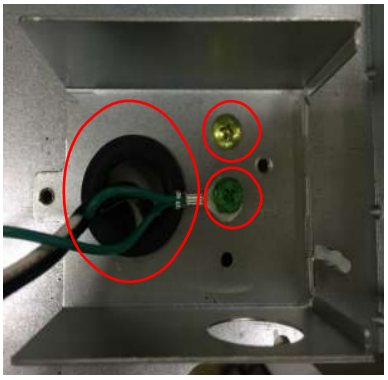
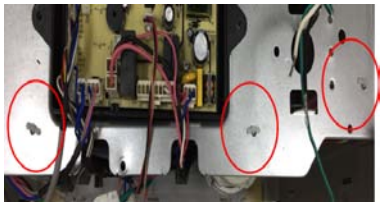
※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Drain Hose		**Preparation:** • Disassemble the Base Cover. - Refer to the Base Cover disassembly section to separate. 1. Remove the Sound-proof Felt.
		2. Pull out the two Hooks(Make sure to wear gloves when removing it. Be careful as the steel plate is sharp and may cut you).
		3. Remove the clamp by rotating.Use a vice plier. (Be careful when removing the clamp as the connection is easily damaged.)
	 	4. Release the hose from Assy Sump carefully and remove it entirely.

※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Rear Leg + Adjust bar		**Preparation:** • Make sure to disconnect the power, water supply, and drain hose connections. • Remove the upper & lower baskets in the dishwasher. • Pull out the dishwasher carefully. Remove the water supply line(& elbow). Make sure to disconnect the power, water supply, 1. Lay the dishwasher down on its back. 2. Remove the Adjusting Leg by rotating counter-clock wise with a needle nose pliers.

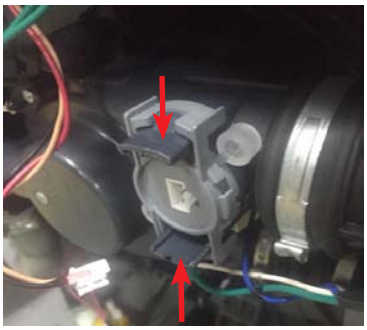
※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
		Preparation: • Disassemble the Base Cover. - Refer to the Base Cover disassembly section to separate. 1. Remove the Sound-proof Felt of Lower Front Crosspiece. 2. Remove the nine screws outside and pull out the Junction Box-B and PBA cover .
Bracket front lower		3. Remove the two screws of Junction Box-A, then pull out the Rubber Ring and the Junction Box-B. ⚠ **Caution** Make sure to wear gloves when removing it. Be careful as the steel plate is sharp and may cutyou.
		4. The guide wire is attached to the Lower Front Crosspiece with hooks. Use a pair of needle nose pliers or flat screwdriver to remove them.

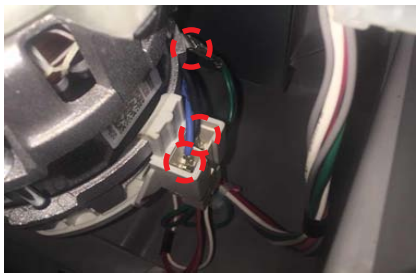
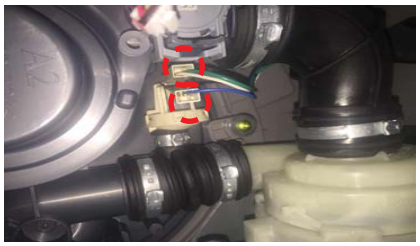
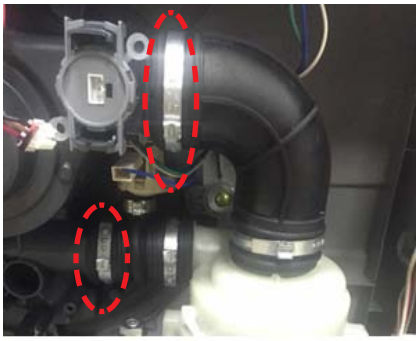
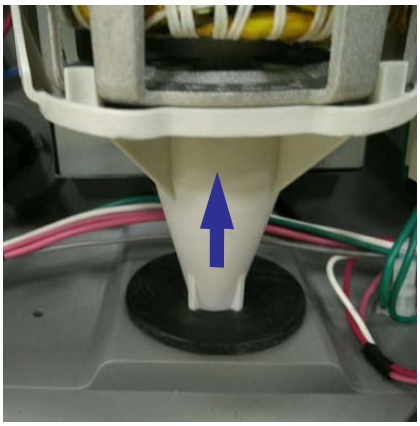
※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Water Valve		1. Remove the two (2) screws from the Base.
		2. Lift up the inlet valve and disconnect the inlet valve wire connector. 3. Release the hose clamp and disconnect hose.
		⚠ **Caution** Caution : When removing the hose clamp, take care to hold it tightly. The clamp is under tension and if released, it can become a projectile. ⚠ **Caution** There will be a residual amount of water in the valve and valve hose. Use a towel to absorb the water when removing the valve.
Thermistor		**Preparation:** • Disassemble the Cover base. - Refer the “Cover base” disassembly section. 1. Remove the one (1) screws of Cover base and pull out the Cover base.
		2. Release the two(2) screws of Thermistor. 3. Pull it out carefully. : The Thermistor has a seal .

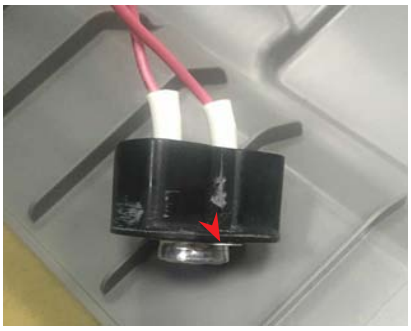
※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Pump-Drain		**Preparation:** • Disassemble the shutter. - Refer the “Cover base” disassembly section. 1. Remove the Pump-drain by rotating it counterclockwise lifting up the hook holding it in place slightly. ⚠ **Caution** Make sure to remove remain water in the dishwasher. If not, water will spill on to the floor. : The Pump-drain has a seal .
		2. Disconnect the two(2) Pump-drain connectors.
Sensor-Turbidity		**Preparation:** • Disassemble the cover base. - Refer the “Cover base” disassembly section. 1. Remove the sensor-turbidity connector.
		2. Remove the two hooks from the sensor-turbidity. ⚠ **Caution** Use a flat screwdriver carefully to remove it from the Assy sump preventing breakage. : The sensor-turbidity has a seal .

※ Reassembly is in the reverse order of the removal.

Part	Figure	Description
Motor		Disassemble the cover base. - Refer the “Cover base” disassembly section. 1. Disconnect the five(5) connectors from the Motor.
		
		2. Loosen the clamps(left side in picture) and release the hose from the sump. 3. Hold and pull out the circulation motor carefully to remove it from the sump. ⚠ **Caution** Make sure to remove remain water in the dishwasher. If not, water will spill on to the foor.
		4. Grab the base and pull out the motor.

※ Reassembly is in the reverse order of the removal.

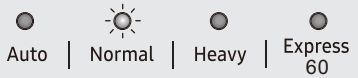
Part	Figure	Description
Thermostat		**Preparation:** • Disassemble the Cover base. - Refer the "Cover base" disassembly section. 1. Remove the two (2) screws from the Base. 2. Lift up the Thermostat wire connector. 3. Pull it out carefully.

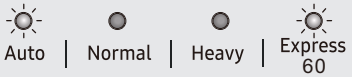
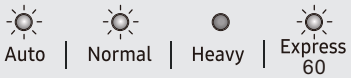
※ Reassembly is in the reverse order of the removal.

4. TROUBLESHOOTING

4-1. PREPARATION

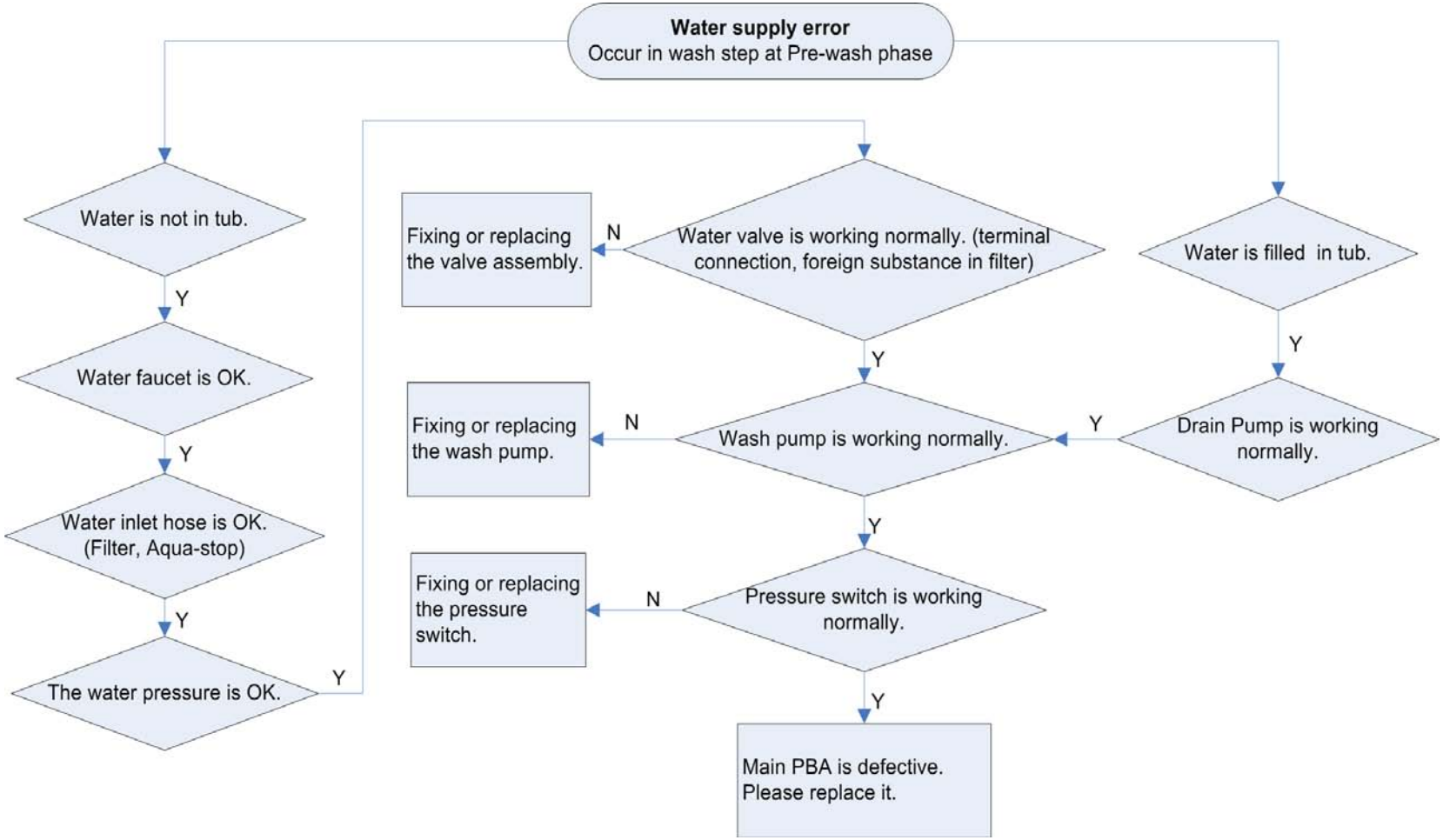
4-1-1. Check Code (S/W ver. 7134~)

Check code Display	When occur	Symptom	Possible Causes
	- When the non-water switch doesn't work in wash step at Pre-wash phase.	- All driving parts except for the drain part are turned off and draining is performed for 120 seconds.(without retry)	- The water supply pressure is low. - The water supply valve is closed. - The non-water switch is broken. - The wash pump doesn't work. - The Main PBA has some problems.
	- When the high-water float switch is on for 5 seconds in 5 times. - When the high water float switch is on for 120 seconds.	- All driving parts except for the drain part are turnedoff and draining isperformed for 120 seconds.(without retry)	- The high-water float switch is broken. - The water value is always open (It cannot be closed). - The Main PBA has some problems.
	- When the heating continually for 60 minutes, yet still not arrive the anticipated temperature.	- All driving parts except for the drain part are turned off and draining is performed for 120 seconds.(without retry)	- The heater is broken. - The thermistor doesn't work normally. - The Main PBA has some problems.
	- When the water leakage sensor date is equal to less than 3V for 2 seconds.	- All driving parts except for the drain part are turned off and draining is performed for 120 seconds.(without retry)	- The case brake fails to detect the pulse. - The valve water is out of order. - The overflow sensor is broken. - There is a water leakage.

Check code Display	When occur	Symptom	Possible Causes
	- When the thermistor is under open-circuit failure.	- All driving parts except for the drain part are turned off and draining is performed for 120 seconds.(without retry)	- The Thermistor is broken. - The main PBA fails to detect the pulse.
	- When the thermistor is under short-circuit failure.	- All driving parts except for the drain part are turned off and draining is performed for 120 seconds.(without retry)	- The Thermistor is broken. - The main PBA fails to detect the pulse.
	- When the button is pressed and held for 30 continuous seconds or longer.	-Keep going remained cycle	- The touch button is out of order. - An object is on the touch button.
	- When communications between the main PBA and the sub PBA fails for 20 seconds	-Keep going remained cycle	- The main PBA or sub PBA is out of order. - The communications connection for the main PBA or sub PBA is not properly connected.

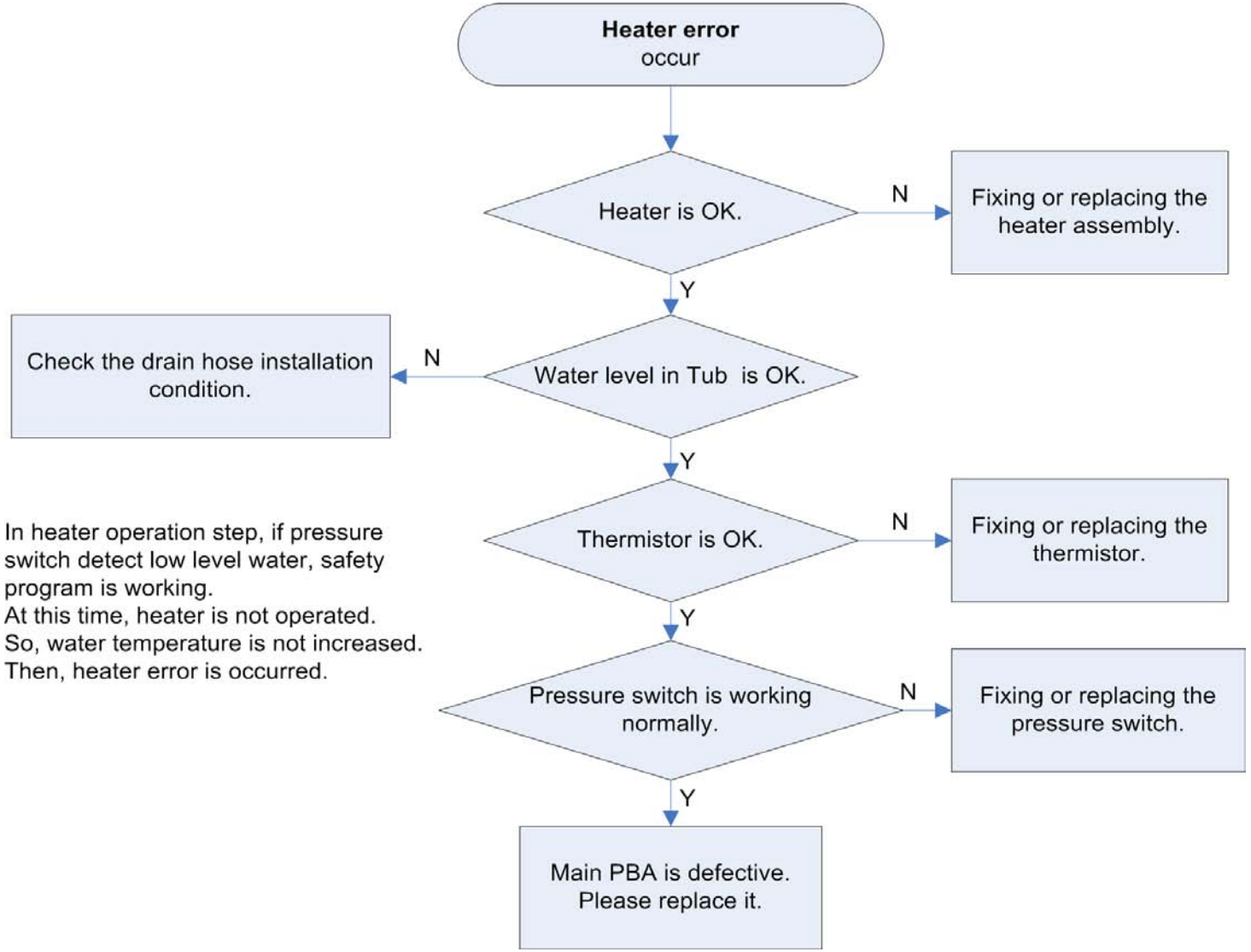
Resolution by symptom

- When water supply is not working



Resolution by symptom

- When heater is not working



4-2. SERVICE INSPECTION MODE

■ SVC Test mode

Item	Description
Auto Mode Configuration	While the door is open, press the “power” button with the “Auto” button and “Express” button pressed down within 3 seconds after turn off. 1. All lights flash. 2. During Auto Mode, all keys except Power key are deactivated. 3. When the test is running, the indicator LED will recycle in "Express LED ->Heavy LED ->Normal LED ->Auto LED". 4. [Auto Mode: Check main board version.] 1) Close the door. 2) 1s for displaying main board code (Auto, Normal, Express LED will be on and Heavy LED will be off) The other 1s for displaying main code version (Auto , Normal LED will be off. Express, Heavy LED will be on). During this time, if the door is opened,The main board code and main code version will alternate display in 1Hz. 5. [Auto Mode STEP 01:check water inlet valve/fan.] 1) Turn on the fan and turn off it after 10 seconds. 2) Turn on the water inlet valve for 54 seconds and then turn off it. 3) If the Turbidity is detected OK all Delay Led indicators will be on. (3h indicator, 6h indicator and 9h indicator will all be on.)

Item	Description
Auto Mode Configuration	6. [Auto Mode STEP 02: check wash pump & Heater] 1) Turn on wash pump. 2) 10 seconds later,turn on the heater.Beep one sound when temperature rises by 3°C-5°C. 3) Shut off loads when the temperature is over 57° and Auto LED, Normal LED, Heavy LED, Express LED will be on. 4) If the temperature does not go up to 57°C after 90min, heater error occurs.(The Express and Heavy light flicker quickly). • You must press Start/Cancel button to skip to next step after the temperature is reached 57°C. 7. [Auto Mode STEP 03: check wash pump & dispenser.] 1) Turn on wash pump for 10 seconds then turn off it. 2) Turn on dispenser for 45 seconds then turn off it. 8. [Auto Mode STEP 04: stop 30 seconds] 9. [Auto Mode STEP 05: check drain] 1)Turn on the drain for 30 seconds then turn off it. 10. [Auto Mode STEP 06: Test over and check sub PBA version] 1) Beep one sound and all load turn off. 2) The sub board code and sun code version will alternate display in 1Hz. Note: sub board code (Auto, Normal, Heavy LED will be off and Express LED will be on). sub code version(Auto, Normal LED will be off, Heavy, Express LED will be on). 3) If restart, the machine will enter standby state. After the SVC Test is over,open the door and check the following list: • Check the dispenser has been opened or not. If it is not opened, that the dispenser is out of order.

■ Checkpoints after service request

1. Check the safety device
Check the operation of the door lock switch. Make sure that it is locked while the dishwasher is running and that the dishwasher stops running when the door is unlocked.

2. Use authentic Samsung replacement parts only
If any part is not authenticated, replace it with an authentic Samsung replacement part.

3. Handling wires
Check if any wires are loose or too tight, if they are connected correctly, if they are well bound with tape, and if they are properly clamped.

4. The state of screws and nuts
Check if the screws and nuts are fastened correctly.
Check whether they are fastened with the specified torque.

5. Remove foreign material
Check whether any foreign material such as soil, wire scraps and screws are in the dishwasher. (Check whether any foreign material is entering through the sump into the disposer.)

6. Check for water leakage
Check whether there is water leakage from the hose connector, door, case sump (drain motor, circulation motor, heater, thermistor, turbidity sensor, distributor motor), and the water supply/drain hoses.

7. Check the power cable
Check if there is any damage to the power cable or power outlet. Check that the voltages are correct.

8. Check leveling
Check to make sure the dishwasher is level.

9. Check the installation location
Check whether the installation location is flat and stable.

■ **Cycle chart**

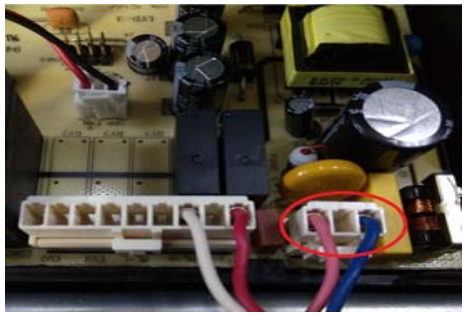
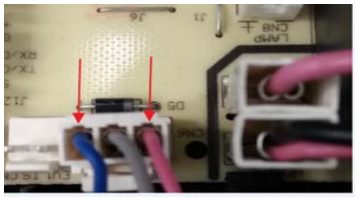
Cycle	Pre-wash1	Pre-wash2	Main wash	Rinse1	Rinse2	Rinse3	Last Rinse [Sanitize]	Dry	Water [gal(l)]	CycleTime (min)	Time with HI-temp(min)	Time with Sanitize(min)
Auto	●	○	● 118-135 °F (48-57 °C)	○	○	●	● 122-136°F (50-58 °C)	●	3-6 (11.4-22.5)	110-135	130	
Normal	●	○	● 108-118 °F (42-48 °C)	○	○	●	● 122-136°F (50-58 °C) [156 °F (69 °C)]	●	3-6 (11.4-22.5)	105-140	130	135-175
Heavy	●	●	● 118°F (48 °C)	●	●	●	● 136 °F (58 °C) [156 °F (69 °C)]	●	6 (22.5)	140	150	170
Express	●	○	● 104 °F (40 °C)	●	●	○	● 122 °F (50 °C)	●	4 (15.1)	60		

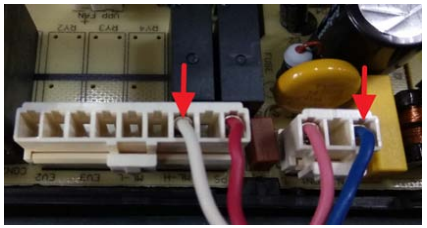
(●: Basic,○: Optional step)

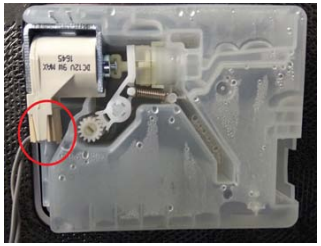
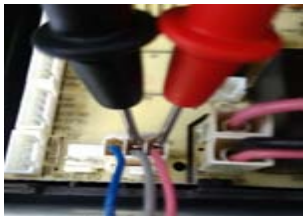
- When you select the Auto or Normal cycle, you can eliminate optional steps depending on the soil level of the dishes.
- The water consumption and wash time varies depending on the steps or options you add, and on the pressure and temperature of the supplied water.
- When you select any options, the cycle time can be changed.

■ Check code trouble shooting

<table>
<tr><th>Check Type</th><th>Check Mode</th><th>Checking Method</th><th>Corrective actions</th></tr>
<tr><td>Leakage Check</td><td>Auto | Normal | Heavy | Express 60</td><td>Check whether there is any trace of water leakage in the shutter.
Normal: No water leakage trace</td><td>Faulty: Check the leakage location. Replace the Faulty part.
Normal: Replace the Main PBA assy.D12</td></tr>
<tr><td rowspan="3">Temperature Sensor Check</td><td>Auto | Normal | Heavy | Express 60</td><td>Check the connections for the Thermistor connector.</td><td>Temperature Sensor Open Circuit
Reconnect the Thermistor connector.</td></tr>
<tr><td>Auto | Normal | Heavy | Express 60</td><td>Check the connections for the Thermistor connector.</td><td>Temperature Sensor Short Circut
Reconnect the Thermistor connector.</td></tr>
<tr><td>Auto | Normal | Heavy | Express 60
<table><tr><th colspan="3">THERMISTOR TABLE</th></tr><tr><th>Temp. (ºC)</th><th>Temp. (ºF)</th><th>Resistance (kΩ)</th></tr><tr><td>5</td><td>41</td><td>22.27</td></tr><tr><td>10</td><td>50</td><td>18.07</td></tr><tr><td>15</td><td>59</td><td>14.75</td></tr><tr><td>20</td><td>68</td><td>12.11</td></tr><tr><td>25</td><td>77</td><td>10</td></tr><tr><td>30</td><td>86</td><td>8.302</td></tr><tr><td>35</td><td>95</td><td>6.928</td></tr><tr><td>40</td><td>104</td><td>5.81</td></tr><tr><td>45</td><td>113</td><td>4.897</td></tr><tr><td>50</td><td>122</td><td>4.145</td></tr><tr><td>55</td><td>131</td><td>3.525</td></tr><tr><td>60</td><td>140</td><td>3.011</td></tr><tr><td>65</td><td>149</td><td>2.582</td></tr><tr><td>70</td><td>158</td><td>2.223</td></tr></table></td><td>Check whether the Thermistor is operating normally.
- Measure the voltage between both ends of the Thermistor.
Normal: 0.2 to 4.5V
- Measure the resistance between both ends of the thermistor :
Remove the connector before measuring.
* See the Table right</td><td>Faulty: Replace the Thermistor(or Assy Sensor ECS).
Normal: Replace the Main PBA assy.D10
 </td></tr>
</table>

Check Type	Check Mode	Checking Method	Corrective actions
Power Check	None	1. Check the connections for the power cable.	- Reconnect the power cable.
		2. Check the voltage of the power outlet. ● Normal: AC 120V	- Connect to a 120V power source.
		3.Check the wires of the Main PBA power part. - Measure the voltage between the pink wire and blue wire of CN01. ● Normal: AC 120V	- Faulty: Check and replace the wires of the power part. - Check voltage 
		4. Check the DC voltage of the Main PBA.	- See “Main PBA DC voltage Check”.
Main-PBA DC Voltage Check	None	Check the DC voltage of the Main PBA. Measure the voltage between pin 1 (PINK) and pin 3 (BLUE)of the main PBA CN6 connector ● Normal (Door Close): 0V ● Normal (Door Open): 11.4V to 12.6V	Check voltage:11.4V to 12.6V 

Check Type	Check Mode	Checking Method	Corrective actions
The nozzle does not inject water.	None	1. Check the connections for the Circulation Motor connector.	- Reconnect the Circulation Motor connector.
		2. Check the connections for the Circulation Motor.	- Faulty: Replace the Circulation Motor.
		3. Check the resistance for the Circulation Motor coil. Place one lead on the blue wire from CN01 and one lead on the white wire from CN02 (Remove the connector before measuring.) ● Normal: Approx. 26.0 Ω	- Faulty: Replace the Circulation Motor. ● Normal: Approx. 26.0 Ω 
The Cycle does not start.	None	Check the operation of the Door Sensing Switch. (Remove the connector before measuring.) : Check the switch terminal both ends. ● Normal: OPEN (when the door is open) ● Normal: SHORT (when the door is closed) ● Normal: SHORT (when the door is closed)	-Faulty: Replace the Door Sensing Switch. ● Normal: Replace the Main PBA assy.
No Washing	None	1. Check whether the nozzle injects water normally.	- See “The nozzle does not inject water”.

Check Type	Check Mode	Checking Method	Corrective actions
Detergent is not dispensed.	None	1. Check whether detergent is inserted into the dispenser.	- Check whether there is detergent in the Dispenser.
		2. Check the connections for the Dispenser connector.	- Reconnect the Dispenser connector. 
		3. Check the resistance of the Dispenser. Measure the resistance between pin 1 (pink) and pin 2 (gray) of the main PBA CN6 connector (Remove the connector before measuring.) • Normal: Approx. 16 Ω	Faulty: Replace the Dispenser. 

PROBLEM	POSSIBLE CAUSE	SOLUTION
Will not start.	The door is not closed completely.	Check that the door is latched and closed completely.
	No cycle is selected.	Select a proper cycle.
	The power cable is not connected.	Connect the power cable properly.
	The water supply does not work.	Check that the water supply valve is open.
	Control panel is locked.	Unlock the child lock, (See user manual.)
	A circuit breaker is open.	Reset the circuit breaker.
It's taking too long with an operation or cycle.	Cold water is being supplied.	Check that the water supply line is connected to a hot water supply. (Additional time is required to heat cold water.)
There are food particles remaining on dishes. (Not cleaning properly.)	You selected an inappropriate cycle.	Select a cycle according to the number and soil level of the dishes, as directed in this manual.
	The water temperature is low.	Connect the water supply line to a hot water supply. For best performance, the temperature of the supplied water should be 120 ˚F (49 ˚C).
	Low water pressure.	The water pressure should be between 20 and 120 psi (140 - 830 kPa).
There are food particles remaining on dishes. (Not cleaning properly.)	The water is too hard.	Use a commercial dishwasher cleaner. Use high-quality, fresh detergent with rinse aid.
	Dishwasher detergent was not used.	Use high quality fresh detergent with rinse aid.
	Detergent remains in the dispenser.	Make sure large items such as cookie sheets, cutting boards, or contaners, etc. are not blocking the detergent dispenser and preventing it from opening properly. Rearrange the dishes so they do not interfere with detergent dispenser operation.
	There is no rinse aid.	Check the dispenser and add the rinse aid. Use liquid type rinse aid.
	A nozzle is clogged.	Clean the nozzle.
	The dishes are improperly loaded. Too many dishes have been loaded.	Rearrange the dishes so they do not interfere with nozzle rotation and detergent dispenser operation. Load only an appropriate number of dishes. Load your dishes as recommended. (See page 16.)
Leaves glasses with a dim polish.	The water supplied is soft and too much detergent was used.	Underload the dishwasher and use a rinse aid to minimize this.
	Aluminum dishes were included in the wash load.	Remove the marks on the dishes using a low sensitivity cleaner.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Leaves a yellow or brown film on the inside of the dishwasher.	This is caused by coffee and tea soils.	Remove the soils using a spot cleaner.
Does not dry dishes well.	There is no rinse aid in the dispenser.	Check the dispenser and add the rinse aid. Use a liquid type rinse aid.
	The temperature of the water is low when the dishwasher is running.	Connect the water supply line to a hot water supply. Use rinse aid with the Sanitize option.
	Too many dishes have been loaded.	Proper loading of items can affect drying. Load your dishes as recommended.
	Glasses and cups with concave bottoms hold water. This water may spill onto other items when unloading.	After finishing the cycle, empty the lower rack first and then the upper rack. This will prevent water dripping from the upper rack onto the dishes in the lower rack.
Has a bad odor.	Water was left over from an incomplete cycle.	Insert detergent without loading dishes, and run the Normal cycle to clean the dishwasher.
	The Drain Hose is obstructed.	Contact a qualified service technician to remove any obstruction from the drain hose.
	The dishwasher is not used daily or soiled dishes are left in unit too long.	With the dishwasher empty and no detergent, place a glass with 8 ounces of vinegar upright into the lower rack, and then run a Normal cycle.
Is too noisy.	Sound is generated when the dispenser cover is open and the drain pump is operating in an early stage.	This is normal operation.
	The dishwasher is not level.	Ensure the dishwasher is level.
	Foreign material (a screw, a plastic piece) is in the pump chamber.	Contact a qualified service technician to remove foreign material from the pump chamber.
	There is a ‘chopping’ sound because a nozzle is bumping against the dishes.	Rearrange the dishes.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Does not have a smoothly rotating nozzle.	The nozzle hole is clogged with food particles.	Clean the nozzle hole.
	The nozzle is blocked by a dish or pot and cannot rotate.	After placing the dishes into the racks, rotate the nozzles by hand to check whether any of the dishes interfere with them.
Water won’t pump out of the dishwasher.	The drain is clogged.	Contact a qualified service technician to remove any obstruction from the drain hose and check the drain pump operation.
Has a bent upper rack after loading dishes.	The dishes are not loaded properly.	Load your dishes as recommended.

5. PCB DIAGRAM

5-1. MAIN PBA

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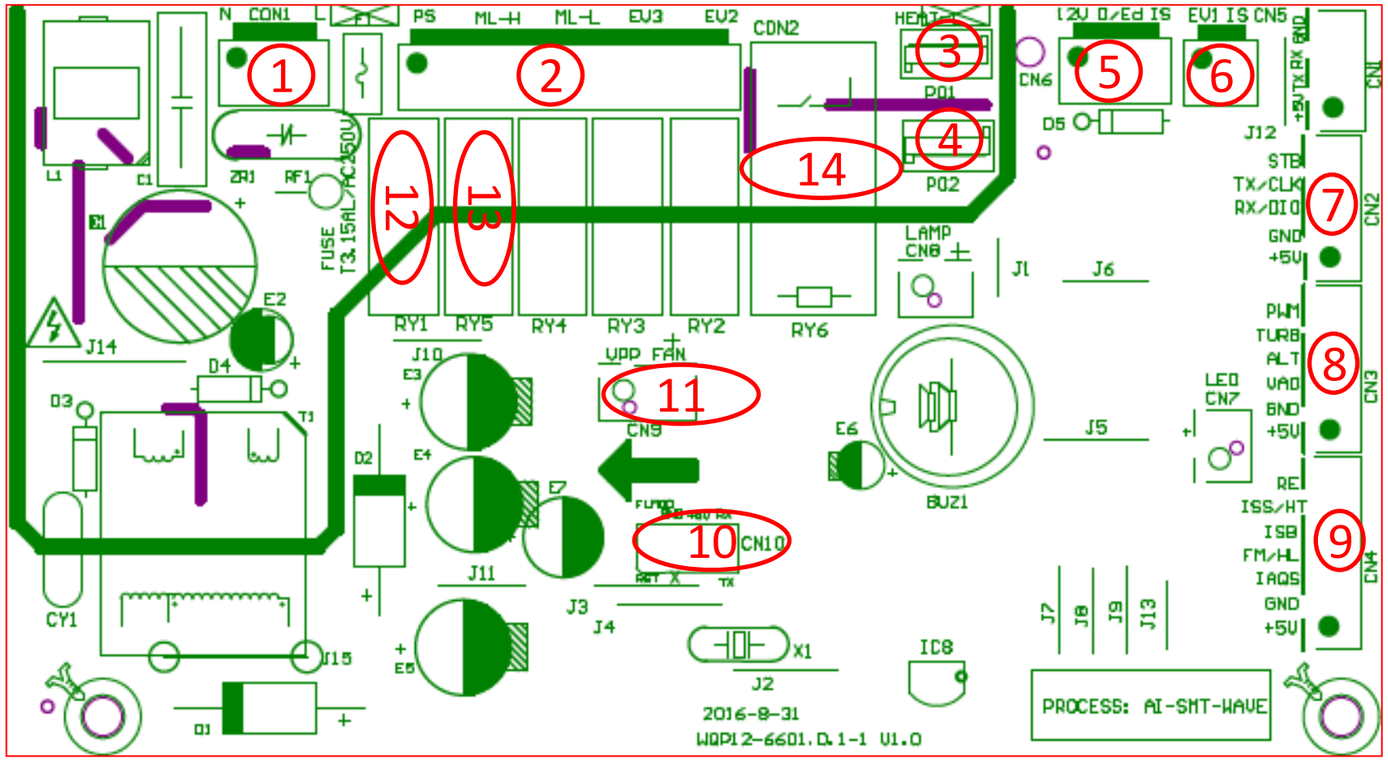

NO	Location	Description
1	CON1	Connector for AC input
2	CON2	Connector for drain motor, washing motor
3	P01	Connector for heater
4	P02	Connector for heater
5	CN6	Connector for door switch, dispenser
6	CN5	Connector for door switch, water valve
7	CN2	Connector for sub PCBA
8	CN3	Sensing connector(refer to next page for details)
9	CN4	Sensing connector(refer to next page for details)
10	CN10	Connector for program
11	CN9	Connector for DC fan
12	RY1	Relay for drain motor
13	RY2	Relay for washing motor
14	RY6	Relay for heater

5-3. PCB DIAGRAM

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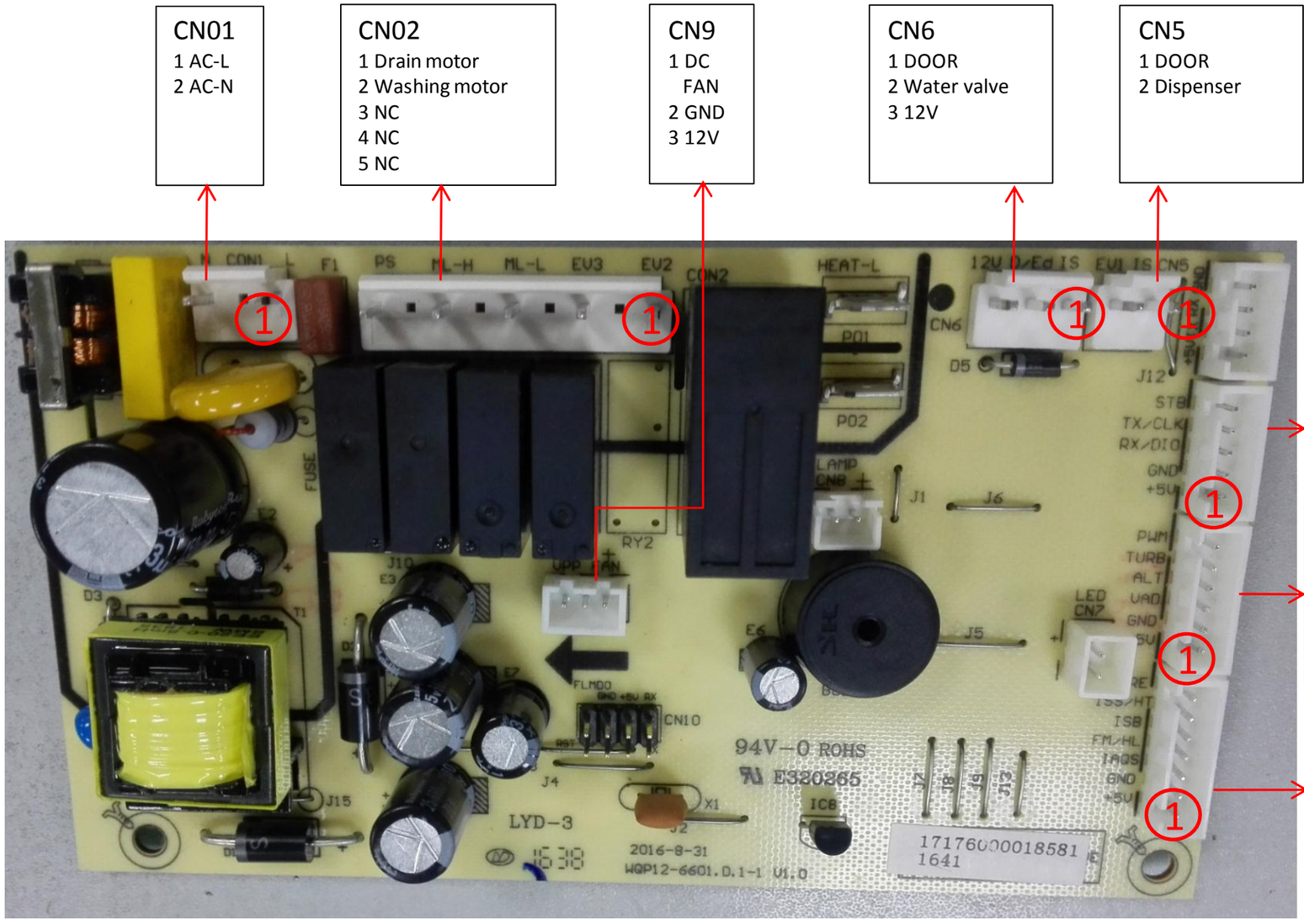

6. WIRING DIAGRAM

6-1. WIRING DIAGRAM

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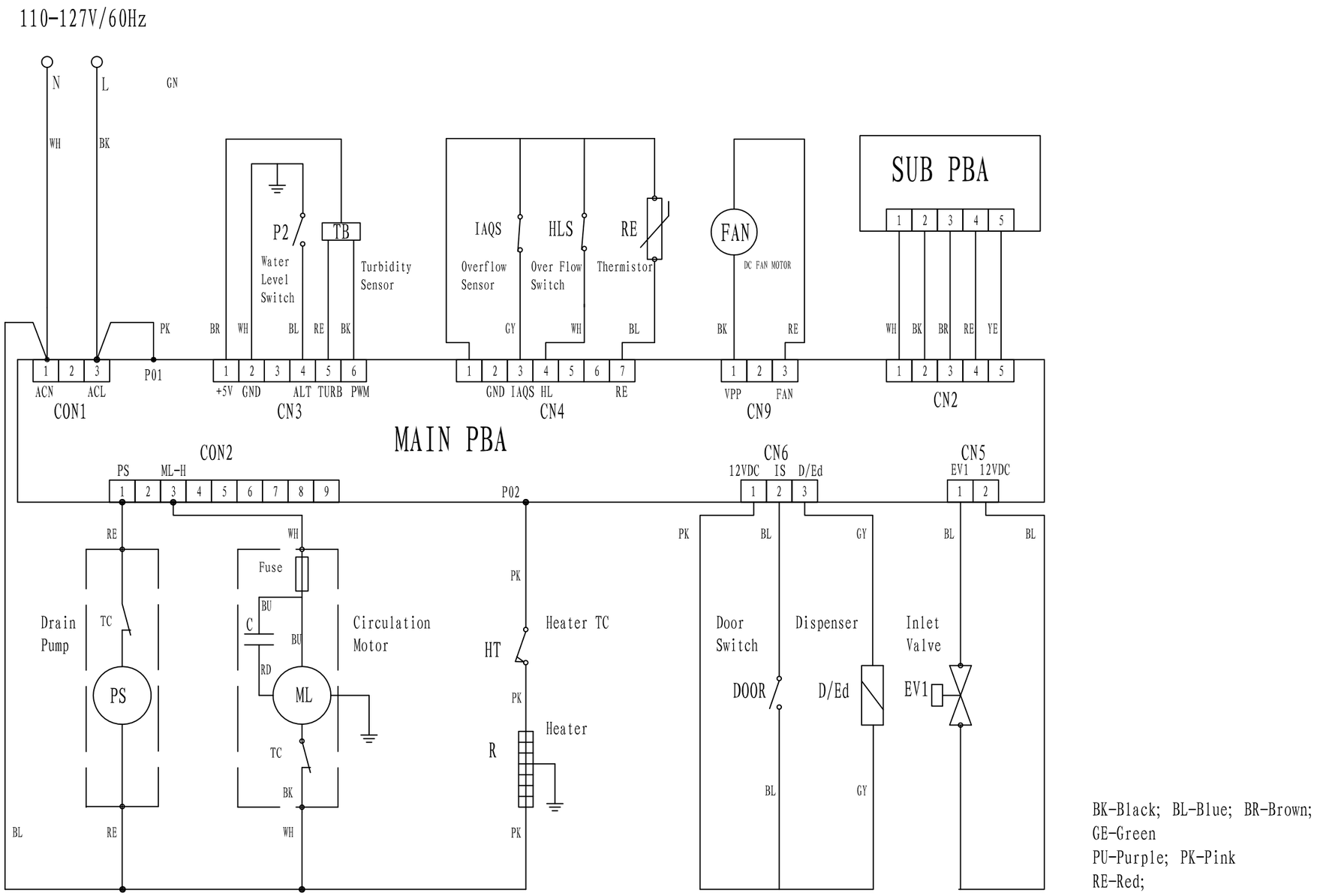
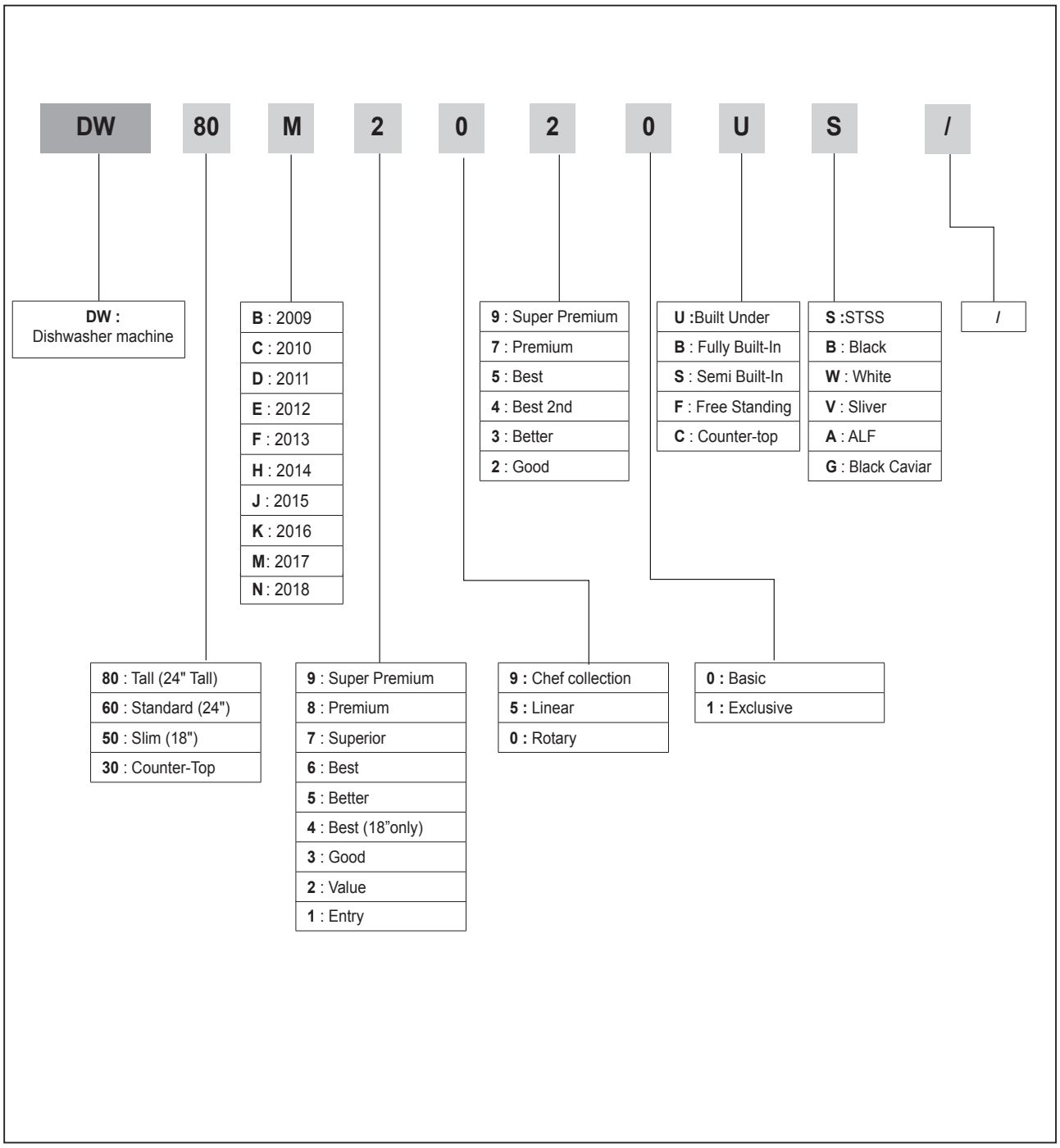


BK-Black; BL-Blue; BR-Brown;
GE-Green
PU-Purple; PK-Pink
RE-Red;
WH-White;
YE-Yellow;

7. REFERENCE

7-1. MODEL NUMBER NAMING RULES



7-2. TERMINOLOGY

1. **Circulation Motor**
   A motor that sucks the water remaining on the floor of the dishwasher and injects water using high pressure through the internal water passages to the top, middle and lower nozzles.

2. **Drain Pump**
   The pump that drains the polluted water from the dishwasher generated while the dishwasher is running.

3. **Heater**
   The heater is located on the water passages inside the dishwasher.
   It heats the flowing water to increase wash efficiency.

4. **Distributor**
   Located at the output end of the sump inside the dishwasher. It turns the flow of the water that goes to the bottom part of the dishwasher on or off.

5. **Dispenser**
   The location where the detergent and rinse aids are stored so they can be used by the dishwasher.
   The dispenser automatically supplies detergent and rinse aids to the inside of the dishwasher when they are needed.

6. **Tub Assy**
   An internal case made of stainless steel that makes up the basic framework of the dishwasher.

7. **Sump Assy**
   The place inside the dishwasher where water is collected. The injected water gathers here after circulation.
   The sump Assy is connected to the circulation motor, drain pump, and distributor motor.

8. **Tub Front Assy**
   An internal case made of stainless steel that makes up the internal part of the front door.

9. **Basket Assy**
   The upper and lower racks where dishes can be loaded.

10. **Top/Middle/Lower Nozzles**
    Washes dishes by rotating and injecting the supplied water through the water passages at high pressure.

11. **Door Lock Switch**
    Detects whether the door of the dishwasher is open or closed. If the door is open while the dishwasher is running, the cycle is temporary stopped.

12. **Child Lock/Unlock**
    This function is used to prevent a child from operating the dishwasher while it is running.

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